

LISTING OF CLAIMS

1. (Currently Amended) A printable composition, comprising:
 - a) a liquid carrier; ~~and~~
 - b) a plurality of nanostructures having an aspect ratio of at least about 5:1 within the liquid carrier; and
 - c) a stabilizing agent configured to inhibit agglomeration of the plurality of nanostructures, said stabilizing agent being a nanostructure surface attached ligand, nanostructure polymeric coating, metal coating, semimetal oxide coating, or metal oxide coating.
2. (Original) The composition of claim 1, wherein the plurality of nanostructures are selected from the group consisting of nanobelts, nanoplates, nanodiscs, nanowires, nanorods, and combinations thereof.
3. (Original) The composition of claim 2, wherein the plurality of nanostructures are selected from the group consisting of nanobelts, nanoplates, nanodiscs, and combinations thereof.
4. (Original) The composition of claim 1, wherein the plurality of nanostructures are nanowires or nanorods.
5. (Original) The composition of claim 1, wherein the plurality of nanostructures have an aspect ratio of at least about 10:1.

6. (Original) The composition of claim 5, wherein the plurality of nanostructures have an aspect ratio of from about 10:1 to about 5000:1.

7. (Original) The composition of claim 1, wherein the plurality of nanostructures are inorganic.

8. (Original) The composition of claim 1, wherein the plurality of nanostructures are doped.

9. (Canceled)

10. (Canceled)

11. (Currently Amended) The composition of ~~claim 10~~ claim 1, wherein the stabilizing agent is a nanostructure metal or metal oxide coating selected from the group consisting of Ag, Au, Pt, Pd, Ni, Co, SiO₂, Al₂O₃, AgO, and combinations thereof.

12. (Currently Amended) The composition of ~~claim 10~~ claim 1, wherein the stabilizing agent is a nanostructure surface attached ligand selected from the group consisting of carboxylates, thiolates, alkoxides, alkanes, alkenes, alkynes, diketonates, siloxanes, silanes, germanes, hydroxides, hydride, amides, amines, carbonyl, nitriles, aryl, and combinations thereof.

13. (Currently Amended) The composition of ~~claim 10~~ claim 1, wherein the stabilizing agent is a nanostructure ~~surfactant~~ polymeric coating.

14. (Original) The composition of claim 1, further comprising a molecular precursor.

15. (Original) The composition of claim 14, wherein the molecular precursor is a metal salt selected from the group consisting of organometallic complexes, inorganic complexes, and inorganic salts.

16. (Original) The composition of claim 1, wherein the plurality of nanostructures comprise from about 1 wt% to about 70 wt% of the printable composition.

17. (Original) The composition of claim 1, further comprising a colorant.

18. (Original) The composition of claim 1, wherein said liquid carrier is a liquid vehicle, and the printable composition is ink-jetable.

19. (Original) The composition of claim 18, wherein the plurality of nanostructures comprise from about 1 wt% to about 40 wt% of the printable composition.

20. (Original) The composition of claim 1, wherein the liquid carrier includes a solvent having a boiling point greater than 90°C.

21. (Currently Amended) A substrate having a printable composition printed thereon in a predetermined pattern, said printable composition including:

- a) a liquid carrier; ~~and~~
- b) a plurality of nanostructures having an aspect ratio of at least about 5:1 within the liquid carrier; and
- c) a stabilizing agent configured to inhibit agglomeration of the plurality of nanostructures, said stabilizing agent being a nanostructure surface attached ligand, nanostructure polymeric coating, metal coating, semimetal oxide coating, or metal oxide coating.

22. (Original) The substrate of claim 21, wherein the plurality of nanostructures are selected from the group consisting of nanobelts, nanoplates, nanodiscs, nanowires, nanorods, and mixtures thereof.

23. (Original) The substrate of claim 21, wherein the plurality of nanostructures have an aspect ratio of at least about 10:1.

24. (Canceled)

25. (Currently Amended) The substrate of ~~claim 24~~ claim 21, wherein the stabilizing agent is a selected from the group consisting of nanostructure surface attached ligands—ligand, nanostructure polymeric coatings, nanostructure metal coatings, nanostructure surfactant coatings, and mixtures thereof.

26. (Original) The substrate of claim 21, wherein the substrate comprises a member selected from the group consisting of ceramics, polymers, cellulose, glass, silicon, organic substrates, metal oxides, and mixtures or composites thereof.

27. (Original) The substrate of claim 21, wherein the plurality of nanostructures are sintered on the substrate.

28. (Currently Amended) A method of forming a conductive path on a substrate, comprising:

a) applying a printable composition onto a substrate, said printable composition including:

- i) a liquid carrier; and
- ii) a plurality of nanostructures having an aspect ratio of at least about 5:1 within the liquid carrier; and

b) removing at least a portion of the liquid carrier,

wherein the plurality of nanostructures are in sufficient contact to provide the conductive path, said conductive path being a trace, transistor, resistor, inductor, gate, diode, capacitor, magnet, or combination thereof.

29. (Original) The method of claim 28, wherein said nanostructures are a member selected from the group consisting of nanobelts, nanoplates, nanodiscs, nanowires, nanorods, and mixtures thereof.

30. (Original) The method of claim 28, wherein the plurality of nanostructures have an aspect ratio of greater than 10:1.

31. (Original) The method of claim 28, wherein the printable composition further comprises a stabilizing agent configured to inhibit agglomeration of the plurality of nanostructures.

32. (Original) The method of claim 28, wherein the substrate comprises a member selected from the group consisting of ceramics, polymers, cellulose, glass, silicon, organic substrates, metal oxides, and mixtures or composites thereof.

33. (Original) The method of claim 28, further comprising heating the substrate sufficient to sinter the plurality of nanostructures.

34. (Original) The method of claim 33, wherein said heating is performed at from about 150 °C to about 900 °C.

35. (Canceled)

36. (Currently Amended) The method of ~~claim 35~~ claim 28, wherein the conductive path has a linewidth of from about 15 μm to about 100 μm .

37. (Original) The method of claim 28, wherein said printable composition is applied using a technique selected from the group consisting of ink-jetting, screen printing, gravure printing, embossing, offset printing, and roller coating.

38. (Original) The method of claim 37, wherein said technique is ink-jetting.

39. (Original) The method of claim 38, wherein said ink-jetting is performed using an ink-jet printhead having an orifice size of from about 15 μm to about 100 μm .

40. (Original) The method of claim 39, wherein said plurality of nanostructures have an average length which is from about 5% to about 80% of the orifice size.

41. (Currently Amended) A system for forming conductive paths on a substrate, comprising a printhead having a firing chamber reservoir containing an ink-jetable composition, said ink-jetable composition including a liquid vehicle; a plurality of nanostructures having an aspect ratio of at least about 5:1 within the liquid vehicle; and a stabilizing agent configured to inhibit agglomeration of the plurality of nanostructures, said stabilizing agent being a nanostructure surface attached ligand, nanostructure polymeric coating, metal coating, semimetal oxide coating, or metal oxide coating.

42. (Currently Amended) A printable composition, comprising:

- a) a liquid carrier;
- b) a plurality of nanostructures having an aspect ratio of at least about 5:1 within the liquid carrier; and

c) a stabilizing agent configured to inhibit agglomeration of the plurality of nanostructures, said stabilizing agent being a nanostructure surface attached ligand, nanostructure polymeric coating, metal coating, semimetal oxide coating, or metal oxide coating.

43. (Currently Amended) A printable composition, comprising:

- a) a liquid carrier;
- b) a plurality of nanostructures having an aspect ratio of at least about 5:1 within the liquid carrier; ~~and~~
- c) a molecular precursor; and
- d) a stabilizing agent configured to inhibit agglomeration of the plurality of nanostructures, said stabilizing agent being a nanostructure surface attached ligand, nanostructure polymeric coating, metal coating, semimetal oxide coating, or metal oxide coating.